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Geologists and Collectors

42

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THE ROCKS AND MINERALS ASSOCIATION

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Organized in 1928 for the increase and dissemination of mineralogic knowledge

To stimulate public interest in geology and mineralogy and to endeavor to have courses in these subjects introduced in the curricula of the public school systems; to revive a general interest in minerals and mineral collecting; to instruct beginners as to how a collection can be made and cared for; to keep an accurate and permanent record of all mineral localities and minerals found there and to print same for distribution; to encourage the search for new minerals that have not yet been discovered; and to endeavor to secure the practical conservation of mineral localities and unusual rock formations.

Ever since its foundation in 1928, the Rocks and Minerals Association has done much to promote the interest in mineralogy. It has sponsored outings, expeditions, formations of mineralogical clubs and the printing of many articles that have been a distinct contribution to mineralogy.

Those of our readers who are members of the Association can rightly feel that they too were sponsors of these many achievements that have helped to give mineralogy a national recognition. Among your friends there must be many who would like to have a part in the Association's work—to share with you the personal satisfaction, the pleasure, and the benefits of membership. Will you give your friends this opportunity to join the Association by nominating them for membership?

Each new member helps to extend the Association's activities—helps to make your magazine larger, better, and more interesting, and above all assists in the dissemination of mineralogical knowledge.

Some advantages of membership: All members in good standing receive:

(1) **Rocks and Minerals**, a monthly magazine. (2) A member's identification card that secures the privileges of many mines, quarries, clubs, societies, museums, libraries. (3) The right to participate in outings and meetings arranged by the Association. (4) the right to display a certificate of membership and to place after their names a designation indicating their membership or to advertise membership on stationery, etc. (5) The distinction and the endorsement which comes from membership in the world's largest mineralogical society.

Mineralogical clubs which subscribe for **Rocks and Minerals** also become affiliated members of the Rocks and Minerals Association and enjoy the advantages which such an affiliation affords.

A number of clubs hold membership in the Association, participate in the annual outings, and co-operate in many ways in furthering the aims and ambitions of the Association.

Affiliation with the world's largest mineralogical society cannot fail to increase membership, enlarge circles of acquaintanceship, and stimulate a keener interest in mineralogy.

A list of affiliated clubs will be found among the back pages of the magazine.

ROCKS and MINERALS

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ROCKS and MINERALS PEEKSKILL, N. Y., U. S. A.

The official Journal of the Rocks and Minerals Association

Chips from the Quarry

THE POSTAGE PROBLEM AND HOW TO MEET IT

A letter was received from one of our subscribers complainly mildly that it is rather difficult for him to ascertain how much postage should be sent when ordering minerals by mail if this amount is not mentioned in a dealer's advertisement. Sometimes, he writes, it is most annoying and even embarrassing. As an example, not so long ago he sent $1.60 ($1.50 plus 10c for postage) to a dealer for a specimen. The postage turned out to be 12c and he was billed for 2c.

It is rather difficult to determine the correct amount of postage, and especially when a number of specimens are ordered. We believe, however, that it would be to a dealer's advantage in good will and prestige in not billing a collector for postage due (10c or less) if an order is over $1; he should charge this to advertising.

A dealer, however, is entitled to the full amount of postage on all orders sent out, since his profit on the average transaction is a very small one, and most collectors are willing to pay it. There are three good ways in ordering minerals by mail in which a dealer will be paid in full without placing too much of a burden on a collector. One way is to furnish the dealer with satisfactory references—order specimens wanted and have him bill you for the amount plus postage. These bills should be paid promptly or within ten days. Another way is to have the minerals sent by C. O. D. mail or by express, charges collect. The third and very popular way is to send in double or triple the amount of the apparent postage and have the dealer refund in stamps the amount due you. For example, if the postage on an order might be 15c, send 25c, 30c or even 50c to cover it. Sometimes if the postage is paid in full and in advance, a dealer is apt to send you larger and even better specimens than your order calls for.

It is a pleasure to extend our thanks to our subscribers and friends for their greeting cards sent us during the Christmas season. Never before did we receive so many and the kind expressions of loyalty, cheer, and good wishes is very gratefully appreciated.

Peter Zodac

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A SURVEY OF THE CARNEGIE MUSEUM MINERAL COLLECTION

By DAVID M. SEAMAN

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The Carnegie Museum is a department of the Carnegie Institute which is supported by the Carnegie Foundation. It is located at 4400 Forbes Street, Schenley Park, in Pittsburgh. It is one of the large museums of the United States.

The mineral collection in the Carnegie Museum numbers more than twenty-five thousand specimens. Some two thousand of them are on display in the mineral exhibition room located on the first floor of the Museum. The remainder are stored in the mineral laboratory on the third floor and are used for study and reference. Of some twelve hundred mineral species known to science, over six hundred are represented in the collection in the Museum.

The first acquisition to come into the possession of the Museum was a gift of five hundred specimens from Gustave Guttenberg, a teacher in the Pittsburgh schools, in the year 1896. During the next few years specimens were presented by numerous persons, and one thousand specimens were also purchased from a New York dealer, George L. English.

In 1905 the collection of the Museum was greatly augmented through the purchase by Andrew Carnegie of the W. W. Jefferis collection, containing from thirteen to fourteen thousand choice specimens. This purchase forms the necleus of the mineral collection. It was presented by Mr. Carnegie to the Museum on January 12, 1905. Many of these specimens have an historical interest in that Mr. Jefferis furnished Charles U. Shepard, J. Lawrence Smith, George J. Brush, and James D. Dana with much of their type material. Some of these specimens have been used for illustration by James Dwight Dana in his famous *System of Mineralogy*, the sixth edition, 1900, edited by Edward Salisbury Dana, as for example a crystal of phlogopite from Clark's Hill, St. Lawrence County, New York (page 633, figure 2); and a crystal of clinochlore from West-town, Chester County, Pennsylvania (page 646). It is also interesting to note that the mineral, jefferisite, one of the hydrous micas, was named for Mr. Jefferis.

Mr. Jefferis resided in West Chester, Chester County, Pennsylvania. He started collecting in 1837 and continued to add to his collection until its purchase by Mr. Carnegie in 1905. Acquiring this magnificent collection was the dominant motive of his life for more than sixty years. He exchanged with many famous collectors and dealers of Europe and America, giving select minerals from Chester and Delaware counties, Pennsylvania, in return for others. His group of minerals from Pennsylvania localities is perhaps the finest in existence.

The weakness in the Jefferis collection was mainly in the native minerals, the sulphides, and the hydrocarbons. This has been rectified through purchases and the many gifts and bequests from individuals to the Museum.

From 1905 until the present time, mining companies, amateurs, and professional collectors have generously added to the

mineral collection by their gifts and bequests. Among this great number only a few who have given large collections to the Museum may be mentioned. They are W. J. Bachtell, Dr. George Clapp, Herbert DuPuy, Dr. W. J. Holland, J. B. Hatcher, Dr. Douglass Stewart, O. P. Scaife, Norman Spang, and Mrs. C. P. Krauth. Among recent collectors who have donated specimens to the Museum may be mentioned H. G. Clinton of Manhattan, Nevada; W. J. Elwell of Danbury, Connecticut; the late W. D. Nevel of Andover, Maine; J. A. Renshaw of Los Angeles, California; H. J. Verrow of Gorham, New Hampshire; and others.

Before discussing the mineral collection itself, it should prove interesting to learn how the minerals are named. Many persons are no doubt familiar with this information and the following is inserted to clarify and to make it known to those who may not be acquainted with it. In modern terminology, minerals are usually named by the addition of the suffix,-ite, denoting one of a group or party, to the name of a person, county, mine, mountain, or some other prominent locality where the mineral occurs or was first found. The recently named mineral, whitlockite, in honor of Herbert P. Whitlock, Curator of Minerals and Gems in the American Museum of Natural History in New York City, illustrates a mineral named for a person. This mineral was found by an amateur collector, H. J. Verrow of Gorham, New Hampshire, at the Palmero Quarry, North Groton, New Hampshire, on a collecting trip in November, 1939. He sent specimens to Harvard University and, after careful study, the scientists found it to be a new rhombohedral, calcium phosphate mineral and named it whitlockite. Thus Mr. Verrow, like many other amateur collectors, has been of aid to the trained mineralogist in unearthing new minerals or in finding better specimens of known minerals. It is interesting to know that at the present time Mr. Verrow is devoting his entire time and energy to the mining of a huge deposit of mica in the town of Campton, New Hampshire, in connection with the war effort.

Chrysoberyl, a rare beryllium aluminate, gets its name from two Greek words meaning golden and beryl. It usually occurs in a golden yellow color, hence its appropriate name. In December, 1939, the Field Museum in Chicago placed on exhibition two crystals of chrysoberyl, not of gem quality, which are perhaps the largest in the world and certainly the largest ever found in North America. The largest crystal measures 5x5x2½ inches and weighs 2½ pounds. It was found together with about a hundred or more other crystals by Richard V. Gaines, of the Colorado School of Mines, at a locality near Golden, Colorado. It is interesting to note that while the writer was a student at the University of Colorado, in 1934, that he picked up a single crystal of chrysoberyl, about 1½x¾x¼ inches in size, from a stream bed near a feldspar quarry along the road to Black Hawk and Central City, eight miles northwest of Golden, Colorado. A short article on this occurrence was published in the May, 1935, issue of ROCKS AND MINERALS. It would be enlightening to learn if Mr. Gaines' specimens were found near there.

With this brief introduction to minerals, let us turn to those on exhibition. There are thirty-two cases in the center of the exhibition room on the first floor of the Museum. The systematic collection is arranged on step-like shelves in these cases. Three wall cases are also used to display the larger specimens; and a number of smaller cases arranged along the walls near the windows, contain the especially large ones such as a meteorite, a large amethyst geode, a six-foot long fulgurite, and so on. The fluorescence booth is placed in the darkest corner of the room. A fifty inch Cooper-Hewitt NiCo Lamp is used to produce fluorescence in the thirty-four specimens displayed. Seventeen different species of minerals which show this property to a marked degree are represented among this number. A small special collection of seventy minerals from Pennsylvania is exhibited in the side of this case facing daylight. Photographs of an astronomical nature as well as an

exhibit of commercial aluminum wares and ores donated by the Aluminum Company of America are placed in the end of the room opposite the fluorescence exhibit. There is also a special case showing the crude minerals from which radium and vanadium are extracted as well as alloys and products manufactured from the same.

NATIVE ELEMENTS or NATIVE MINERALS

In the first case in the systematic collection arranged according to Dana we see the native elements. Of the non-metals there are four diamond crystals, not of gem quality, from Kimberley, South Africa, ranging from one-quarter inch up to five-eighths of an inch. The three smaller crystals show the typical octahedron form; the largest crystal showing a combination of the octahedron and dodecahedron. Graphite from New York, Pennsylvania, Ceylon, and other places is displayed. Sulphur is well represented by crystallized specimens from Sicily; and from Michigan, California, and Utah in the United States.

The native metals and semimetals are exhibited with specimens of gold, silver, copper, lead, iron, tellurium, arsenic, bismuth, and antimony. Gold is of course the most prominent being shown from sixteen different localities. North Carolina, Virginia, California, Colorado, New Mexico, and Arizona are represented as well as the foreign countries of Hungary, Dutch Guiana, Africa and Australia. One very fine specimen from Ballarat, Australia, 4x4 inches in size, shows platy gold thickly shot through quartz. The gold displayed in this case is in wires, plates, aborescent forms, crystals, and nuggets. Native silver from Canada, Mexico, England, and Norway is shown. Some fine half-breeds, half native silver and half native copper crystallized together, are present from the Lake Superior District. Native copper is well represented by the usual fine specimens from Michigan. A fine aborescent specimen of native lead, 2x3 inches in size, is on exhibition from Pajsberg, Sweden. Native iron, meteoric, is represented with a 496 pound meteorite from Canyon Diablo, Arizona, which is exhibited in a special case near the fluorescent booth. Native, or terrestrial iron, is very rare in the United States but a small specimen from Virginia is present. An excellent specimen of native tellurium from Iola, Gunnison County, Colorado, is also shown in this case.

Sulphides

The sulphide group of minerals is the next group on exhibition. Realgar, orpiment, stibnite, molybdenite, cinnabar and others are present in this case. Nine superb crystal groups of stibnite crystals from Japan are shown with individual crystals ranging up to 10 inches long and finely terminated. Molybdenite is displayed from Canada; Okanogan County, Washington; Climax, Colorado; Chester, Pennsylvania; Brewster, New York; and etc. The recently discovered mineral, gratonite, from Cerro de Pasco, Peru, is present in two small, excellent groups of crystals from this locality. The common metallic sulphides, galena, sphalerite, cinnabar, chalcopyrite, chalcocite and others are displayed from American and European localities. Chalcocite is especially well represented by three well terminated groups of crystals from the old, long abandoned locality at Bristol, Connecticut. Chalcopyrite is shown in good crystals from the French Creek mines of Chester County, Pennsylvania. Many other well formed crystals of minerals in this group are exhibited as pyrargyrite from Zacatecas, Mexico; enargite from Butte, Montana; bournonite from Cornwall, England; and stephanite from Schemnitz, Hungary.

Haloids

The haloids form the group of minerals containing the chlorides, bromides, iodides, and fluorides. Halite is shown with magnificent 5 inch cubic crystals from Salzburg, Austria. Mr. Jefferis must have been particularly fond of fluorite as demonstrated by the great number of specimens from England and other European localities, as well as from Illinois, Kentucky, and Tennessee in this country. Cryolite is represented by specimens from the only commercial source of this strategic mineral at Ivigtut, Greenland. The very low fusibility of this mineral has

made it very valuable as a flux in the electrolitic process for the production of aluminum. It is little wonder that the protection of Greenland is so vital when we must keep control of this mineral for our aluminum production. A number of rarer species of minerals in this group are exhibited as matlockite from Derbyshire, England; mendipite from Brilon, Westphalia; laurionite from Laurium, Greece; schwartzembergite from Cerro Gordo, Chile; atacamite from Atacama, Chile; carnallite from Stassfurt, Germany; terlinguaite and montroydite from Terlingua, Texas; and pachnolite, thomsenolite, and ralstonite from Ivigtut, Greenland.

Oxides

The oxides consist of the many elements which combine in nature with the gas, oxygen. In this group, quartz, silicon dioxide, is predominent not only because it forms our most common oxide but also because it provides many gem stones; the rock crystal, amethyst, citrine, smoky quartz, rose quartz, agate, carnelian, onyx, bloodstone, and many other varieties suitable for gem purposes. A huge crystal of smoky quartz from St. Gothard, Switzerland, on exhibition, measures 1x1½ feet by 1x1½ feet. There are also displayed two large, smoky quartz crystals, doubly terminated, from Mt. Apatite, Auburn, Maine, of about the same size. Amethyst crystals of fine color up to 4x6 inches from Delaware County, Pennsylvania, are prominently shown. Many other fine amethysts from Guanajuato, Mexico; Little Pipestone District, Montana; Lake Superior; Lincoln County, North Carolina; and Rabun County, Georgia, are well represented by material on exhibition. A large, 1x1½ foot, geode lined with amethyst crystals from Uruguay is displayed in a special case near the windows. The rose variety of quartz is shown by specimens from Maine, New York, Connecticut, South Dakota, Japan, and Bavaria. The cryptocrystalline varieties of quartz as chalcedony, agate, agatized wood and so on are represented with many specimens from American and European localities. Agates from Brazil and agatized wood from the Petrified Forest of Arizona are the most noteworthy. Opal, the hydrous variety of silicon dioxide, may for convenience also be placed in this group of oxides. It is represented by specimens of fire opal from Mexico, precious opal from Australia, colorless hyalite opal from Mexico, and blue hyalite opal from Little Switzerland, North Carolina.

The metallic oxides are displayed with excellent crystals of hematite, rutile, corundum, cassiterite, cuprite, and others. Hematite is present in crystals from the Island of Elba; iron roses from St. Gothard, Switzerland; and kidney ore from Cumberland, England, Corundum is shown in crystals from Newlin and Mineral Hill, Pennsylvania; ruby corundum from Hogback Mountain and Buck Creek, North Carolina; rubies and sapphires from the Culsagee Mine near Franklin, North Carolina; common corundum from Laurens District, South Carolina, and Laurel Creek, Georgia; sapphires from Montana; and rubies and sapphires from Ceylon. Rutile is prominent in crystals up to 4x4 inches from Graves Mountain, Georgia, as well as fine geniculated twin crystals from the old localities of Pomeroy, Newlin, and Sadsbury, Pennsylvania; and Alexander County, North Carolina. Cassiterite is shown by perfect crystals from the well known Bohemian localities, and in partly crystallized masses from Hebron and Rumford, Maine. Brucite, magnesium hydroxide, is represented by many crystals from the old locality of Woods Mine, Texas, Lancaster County, Pennsylvania. The Jefferis collection contains over fifty specimens of this mineral from that locality.

Carbonates

The carbonates are exhibited in three cases, one case containing the many different crystal forms of calcite, with the other carbonates being shown in the other two cases. Calcite, the most common carbonate, is present in well crystallized specimens from Joplin, Missouri; Rossie and other New York localities; French Creek Falls, Pennsylvania; Paterson, New Jersey; Nova Scotia; Guanajuato, Mexico; Iceland; Canada, and etc.

Fine butterfly twins from Egremont, England, are prominently displayed. A large, purple, twinned crystal from Webb City, Missouri, measuring 1x1½ feet, is especially interesting. Excellent large cleavages of Iceland spar from Iceland, 3x4 inches in size, are also of interest. Dolomite is represented with excellent pink crystals from Joplin, Missouri; Hiddenite, North Carolina; New Point, Indiana; Rochester, New York; and other American localities. Beautiful dark red crystals of rhodochrosite from Alicante, Colorado, together with sky-blue smithsonite from Greece brighten up this group of minerals. Among the number of other carbonates exhibited are aragonite crystals from England and Sicily; witherite crystals from Hexham, England; and phosgenite from Monte Poni, Sardinia.

Silicates

The silicates form our largest group of minerals. Many are of vary complex chemical composition. They are important to the lapidist, jeweler, and the collector because they yield many gems and ornamental material as beryl, zircon, topaz, garnet, spodumene, tourmaline, peridot, jade, rhodonite, sodalite, and many others. A number of rare species of silicates occasionally provide gem material as benitoite, euclase, phenakite, iolite, titanite, vesuvianite, and dioptase.

Beryl provides four separate gems. The clear, emerald green variety is among the most precious of all gem stones. Emerald crystals are on display from Peru, Austria, and Siberia. The clear, pale to dark blue or pale green, transparent variety yields the handsome aquamarines. Aquamarine beryl crystals are exhibited from Paris, Maine; Grafton, New Hampshire; Leiperville and Newlin, Pennsylvania; and Nerchinsk, Siberia. Yellow or golden beryl is on display from Siberia. The rose cesium beryl, or morganite, is present from Uncle Toms Mountain, Greenwood, Maine, though not in gem quality. Common greenish-blue beryl is especially numerous from the old localities of Chester and Delaware Counties, Pennsylvania; Haddam, Connecticut, and other places.

Excellent, blue, gem quality topaz crystals are exhibited from Minos, Japan; Alabaska, Siberia; and Crystal Peak near Florissant, Colorado. One very perfectly terminated, light blue crystal 2x3 inches in size from Alabaska, Siberia, is of especial interest. Other topaz specimens are present from Villa Rica, Brazil; Durango, Mexico; and the Thomas Mountains, Utah.

Spodumene yields two varieties; kunzite, a lilac colored, and hiddenite, an emerald green stone. A small ½x1 inch crystal of hiddenite is shown from the celebrated locality of Hiddenite, North Carolina.

Garnets are well represented among the silicates, from many European and American localities. Among the American localities are Salida, Colorado; Russell, Massachusetts; Middletown, Knauertown and Avondale, Pennsylvania; Franklin, New Jersey; Amelia, Virginia; Raymond, Maine; Fort Wrangell, Alaska; Wakefield, Canada; Morelos, Mexico, and so on.

Tourmaline, a very complex silicate, is represented from a number of localities. An excellent dark red rubellite crystal section 2x3 inches in size from Mesa Grande, California, is on exhibition. A large but not gem quality rubellite specimen showing fan structure 8x8x10 inches in size from Black Mountain, Rumford, Maine, was collected by my wife and me during a collecting trip to Maine in the summer of 1941, and is now on exhibition. Another beautiful watermelon tourmaline crystal section from Newry, Maine, is on display. It was obtained from the late W. D. Nevel, of Andover, Maine. Other colored tourmalines are shown on exhibition from Auburn and Poland, Maine; Chester, Massachusetts; Portland, Connecticut, and other localities in the United States. Foreign localities as the Island of Elba and Brazil are also represented. The brown variety of tourmaline is displayed by well terminated, large crystals up to 3x4 inches in size from the old locality at Gouverneur, New York. The common black variety is exhibited from Pierrepont, New York; London Grove, Newlin, and other locali-

ties in Pennsylvania; Haddam, Connecticut; and from a number of other places.

Among the other common silicate minerals fine crystals of microcline, variety amazonite, from Crystal Peak, Colorado; rhodonite from Franklin, New Jersey; axinite from Dauphiny, France; kyanite from Whitehall, North Carolina; and zircon crystals in matrix from Zirconia, North Carolina, are interesting. Some of the rare silicates shown in the collection are iolite from Haddam, Connecticut, and Gorham, New Hampshire; benitoite and neptunite from San Benito County, California; and dioptase from Arizona and the Kirghez Steppe, Siberia.

The zeolite group containing the hydrous silicates is well displayed by many different species of these minerals. These are present from Paterson and Bergen Hill, New Jersey; Guanajuato, Mexico; Poonah, India; Kilpatrick, Scotland; Berufiord, Iceland; and Cape Blomidon and Two Islands, Nova Scotia.

The specimens of the different species of mica are an interesting group of minerals. Muscovite is exhibited from Buckfield and Stoneham, Maine; Spruce Pine and Stony Point, North Carolina; Branchville, Connecticut; and Pennsybury, Pennsylvania. Lepidolite from Portland, Connecticut; Hebron, Auburn and Rumford, Maine; and Rozena, Moravia, add much color to this group. Clinochlore is present from West-town and West Chester, Pennsylvania; and from the Tilly Foster Mine near Brewster, New York. A number of other micas are also shown as margarite from Chester, Massachusetts; lepidomelane from Litchfield, Maine; biotite from Rossie, New York; jefferisite from Birmingham and West Chester, Pennsylvania; and vermiculite from Nottingham, Pennsylvania. Many other silicates too numerous to mention are also exhibited.

Niobates and Tantalates

The niobates and tantalates are well exhibited with specimens of dysanalyte from Magnet Cove, Arkansas; microlite from Amelia, Virginia; fergusonite from Bluffton, Texas; columbite from Amelia, Virginia; samarskite from Burnsville, North Carolina; tantalite from Arksutfiord, Greenland; and euxenite from Spangereld, Norway. Columbite is also present from Burnsville, North Carolina; Kingston, South Dakota; and Portland, Connecticut. Last summer I collected a massive specimen of samarskite with some feldspar from the McKinney Mine near Little Switzerland, North Carolina, which measures 6x8 inches and it has been placed on exhibition.

Phosphates

The minerals in the phosphate group provide many species among which some are quite rare. Apatite, one of the most common phosphates, is well exhibited by crystals from Eganville and Burgess, Canada; and from Rossie, New York. The purple variety which yields a rather soft gem stone is present in crystals from Ehrenfriedersdorf, Saxony; and Greenwood, Maine. Pyromorphite is represented by fine specimens from Cumberland, England; Nassau, Germany; and from the lead mines of Chester County, Pennsylvania. Among the other species of phosphates present are beryllonite and herderite from Stoneham, Maine; amblygonite from Paris and Greenwood, Maine; wagnerite from Bramle, Norway; griphite from Pennington County, South Dakota; dufrenite from Liskeard, England; lazulite from Lake Baikal, Siberia, and Graves Mountain, Georgia; eosphorite crystals from Black Mountain, Rumford, Maine; wavellite from East Whiteland, Pennsylvania; and monazite from Madison County, North Carolina. The rare phosphate, graftonite, is represented by fine specimens from Grafton and North Groton, New Hampshire. Type material of lithiophilite from Branchville, Connecticut, is on display. Triphylite is on exhibition from Grafton, New Hampshire and Newry, Maine. The well known gem mineral of the phosphate family, turquois, is exhibited from Los Cerillos and Santa Fe, New Mexico.

Chromates, Molybdates, Vanadates

One of the chromates, crocoite, provides us with beautiful crystals of a hyacinth-red color. Specimens from Dundas, Tasmania, are displayed. Wulfenite, lead molybdate, at times is found in very brilliant yellow colored crystals, especial-

ly from the Organ Mountains, New Mexico. Orange-red crystals come from localities in Yuma County, Arizona. Both localities are represented with specimens. Vanadinite, another lead mineral, is found in very brilliant, small, ruby-red crystals in Yuma county, Arizona, and specimens from there are on exhibition. All of these minerals are very colorful and help to brighten up any mineral collection.

Borates

The borates are well represented by specimens on display of colemanite from San Bernardino County, California; priceite and pandermite from Panderma, Turkey; borax and ulexite from California; and boracite from Segeberg, Germany.

Uranium Minerals

The uranium bearing minerals are present from many localities. Torbernite is on display from Redruth, Cornwall, England; and the Mckinney Mine near Little Switzerland, North Carolina. Autunite is shown from Autun, France; Falkenstein, Germany; Grafton, New Hampshire; and Penland, North Carolina. Uraninites from Portland, Connecticut, and Penland, North Carolina, are exhibited. Carnotite from Colorado; gummite from Mitchell County, North Carolina and Grafton, New Hampshire; and thorogummite from Llano County, Texas, are also prominently displayed. The new mineral, dakeite, from near Wamsutter, Wyoming, is also exhibited.

Sulphates

Many different species of minerals in the sulphate group are represented by specimens on exhibition... Among this great number barite from Cumberland, England; Felsobanya, Hungary; Marienburg, Saxony; and Sterling, Colorado, are found. Anglesite is present from the well known Pennsylvania localities; the Wheatly Lead Mines and the Brookdale Mine of Chester County; also from Cumberland, England. Glauberite from Stassfurt, Germany; and thenardite and hanksite from San Bernardino County, California, are present in fine specimens. The common mineral, gypsum, variety selenite, is shown by fine crystals from Gotha, Germany; Bex, Switzerland; Bristol, England; Cianciana and Racalmuto, Sicily; Sweetwater, Texas; Ellsworth, Ohio; and many other localities. The well known occurrences of celestite from Girgenti, Sicily; Lampasas, Texas; and Strontian Island and Put in Bay, Lake Erie, are well represented. Rarer sulphate minerals shown on exhibition are leadhillite from the Leadhills, Scotland; caledonite from Trail Creek, Colorado; brochantite from Frisco, Utah; linarite from Roughten Gill, England; coquimbite from near Copiapo, Chile; langite from Clausen, Tyrol; and serperierite from Laurium, Greece.

Tungstates

The tungstates are displayed by specimens of wolframite from Zinnwald, Bohemia and Cornwall, England; stolzite from Broken Hill, New South Wales; hubnerite from Gladstone, Colorado; Scheelite from Traversella, Italy; from Zinnwald, Bohemia, and Cumberland, England; and ferberite in tiny crystals from near Nederland, Colorado.

At the present time we are cataloging the entire collection, rearranging those minerals on exhibition, and are adding about one hundred other species of minerals which had been stored in the mineral laboratory and had not previously been displayed in the exhibition collection.

NOTES ON GYPSUM CRYSTALS IN MORTON COUNTY, NORTH DAKOTA

By **ROBERT H. MITCHELL**, Muskingum College
and
WILSON M. LAIRD, University of North Dakota

In southeastern Morton County, North Dakota, gypsum is a common mineral in the Hell Creek formation of the Upper Cretaceous and the Ludlow and Cannonball formations of the Tertiary. The gypsum occurs in the form of crystalline balls or rosettes and well formed crystals in the sands and sandy-shales. In some exposures, gypsum fragments are abundant on the surface due to the disintegration of the crystals on weathering.

The sands in which these gypsum crystals are found are usually calcareous in nature, particularly the sands of the Hell Creek formation. Fragmental plant remains and marcasite concretions occur in the sands and are closely associated with the gypsum crystals. For the most part the marcasite concretions are so weathered to limonite that none of the original marcasite remains.

The gypsum, occurring as it does in crystalline balls and rosettes rather than in beds, indicates that it is of secondary origin. In the Cannonball formation in section 32, T. 133 N. R. 88 W., Grant County, North Dakota, a weathered marcasite concretion was found which is of particular interest since it not only confirms this conclusion but which also sheds light on the mode of origin of the gypsum. This concretion when first observed appeared to be composed of limonitic material but when broken open it was found to contain a band of gypsum crystals beneath the surficial zone of limonitic material. At the center a nucleus of lignitic material was observed.

"Marcasite being relatively unstable is easily altered.[1] Specimens often disintegrate with the formation of ferrous sulfate and sulfuric acid. It also alters to pyrite, limonite, etc." This condition no doubt accounts for the prevalence of the limonite concretions which are associated with the gypsum crystals as well as the surficial material of the concretion described. The reaction involved may be expressed by the following equation:

$$4\ FeS_2 + 15\ O_2 + 8\ H_2O = 2Fe_2O_3 + 8\ H_2SO_4$$

Water, in which carbon dioxide from the air and from decaying vegetation has been dissolved in percolating downward through the sands in which the gypsum now occurs dissolves some of the calcareous material. The calcium bicarbonate solution so formed reacts with the sulfuric acid to form calcium sulfate which in turn unites chemically with two molecules of water to form the gypsum crystals as indicated in the following equation:

$$CaH_2(CO_3)_2 + H_2SO_4 + 2H_2O = CaSO_4 \cdot 2H_2O + 2H_2CO_3.$$

That this reaction is aided by the presence of organic matter is clearly indicated by the zones in the concretion. Gypsum crystals have formed around the lignite at the center while limonitic material forms the surficial zone. The reaction, therefore, seems to have gone on to completion in the presence of the lignite which acts as a catalyst.

In summary, it is believed that reactions similar to those just outlined in all probability are responsible for the prevalence of gypsum crystals in the Hell Creek, Ludlow and Cannonball formations. The weathering of the numerous marcasite concretions supplies sulfuric acid. Ground water containing dissolved carbon dioxide percolates downward through the calcareous sands in which the marcasite concretions occur. The calcium bicarbonate solution thus formed reacts with the sulfuric acid to form gypsum. This reaction is aided considerably by the presence of organic material in the form of numerous plant fragments and lignitic material in the sands.

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1 Ford, W. E., Dana's Textbook of Mineralogy, 3d ed., p. 381.

TUNISIA RICH IN MINERALS

Tunisia is a French protectorate in the extreme northern part of Africa. Its area is about 48,000 sq. miles and its population about 2,000,000.

It is bounded on the north and east by the Mediterranean Sea, on the southeast by Italian Libya, on the south by the Sahara Desert, and on the west by Algeria (also a French protectorate).

Tunisia is one of the Barbary states—others are Algeria, Morocco, and Tripoli. Barbary is derived from Berber, the name of a native race.

The country is slightly mountainous in the north but in the south it is traversed by vast desert steppes. Its physical features are not remarkable, however, as it is mainly hilly. Though it contains the eastern end of the Atlas Mountains, it can hardly be called a mountainous country. Its plains are very deficient in water. In the southern part of the country are a line of lakes and lagoons called shotts.

The coast to the east of the Gulf of Tunis (northern part) is low and sandy but to the west it is very rocky. The interior is traversed by the Atlas Mountains whose average height is between 4,000 and 5,000 feet.

Tunis, the capital, near the northeast coast, is about 3 miles from the ruins of ancient Carthage. Bizerta, the heavily fortified city now being attacked by an Allied Army, is on the north coast.

The principal river of Tunisia is the Medjerda, which rises in northeastern Algeria near Souk-Ahras and flows northeast into the Mediterranean Sea near Porto Farina (about halfway between Bizerta and Tunis). It is 228 miles long.

Tunis is rich in minerals. Its phosphate beds are almost inexhaustible. It produces large amounts of iron, zinc, lead, manganese, and marble. Some nice vanadinite specimens have been obtained from near Souk-el-Khemis; fine crystallized celestite occurs at Jebels Bezine and Kebbouch, cotunnite (lead chloride) crystals have been found on ancient Roman lead plates immersed in the sea near Mehdia (on the northeast coast)—these crystals have been formed by the action of sea water on the lead of the plates.

Phosphate deposits

The chief deposits of phosphate rock in Tunisia are in the southern part of the country in the Gafsa region. There phosphate occurs in beds several feet thick which can be traced for several hundred miles. In the Gafsa region the deposits are worked at Metlaoui, Ain, Moulares, and Redevef and transported to the ports of Susa an Sfax by rail. Both of these ports are on the east coast. Deposits are also worked at Kalaa-Djerda, Kalaa-es-Senan, Meheri Zebbeus, and Moilla.

Iron Ores

Iron ores are abundant and of good quality. They occur especially to the south of El Kef (northwestern Tunisia) and not far from the Algerian frontier at Jebels Slata, Djerissa, and Hameima; to the north of El Kef at Nebeur, and at the Nefzas in Kroumirie. (Jebel or Djebel means hill or mountain).

The ore is mainly high grade hematite, and most of it is sent to Tunis, the shipping port, by rail.

Zinc and Lead Deposts

The ores mined consist chiefly of calamine and galena with a little sphalerite. The deposits are all situated in the northern part of Tunisia. Some of the deposits are[1]: Kanguet (Khanguet) and Tout, which lies about 19 miles from Beja on the road from Beja to the northwestern port of Tabarca (Tabarka); the Sidi-Ahmet lies north of the Sidi-Ahmet Mountains, about 25 miles from Beja; the Fedj-el-Adoum lies about 12 miles southwest of Tebursuk, in the highest part of the Jouaouda Mountains, which rise to an elevation of 907 meters (2,976 ft.); Zaghouan lies about 38 miles south of Tunis near the village of Zaghouan; El Akhouat lies about 20 miles southwest of Tebursuk.

Some fine crystallized cerussite and

(Continued on page 20)

1 Ingalls, W. R.—Production of lead and zinc. Eng. & Mining Journal, New York. p. 228.

A "RESTFUL" VACATION!

By ENID M. LISLE

San Francisco, Calif.

Towards the end of last May, late one Friday afternoon, my husband and I started off in the little Hillman-Minx automobile on what was intended to be a restful week's holiday. We headed northward, our first destination being the Chan Jade Mine, some miles beyond Happy Camp, Siskiyou County, Calif., which Mr. J. L. Kraft maintains for his own enjoyment and from which he had very kindly given us permission to take specimens up to 100 lbs.; but we never could get anything like that amount into the little car, nor find room for it in our small city apartment. All we wanted were a few pieces for cutting.

We stayed that first night at Santa Rosa, at a most comfortable Motel, set in a beautiful flower garden. Never have I seen so great a variety of roses, or of such a size, as in that garden! Bouquets of them appeared to have been carelessly thrown up to the roofs of the little cabins, where they had caught and hung from the ragged edge of "nothing," trailing down in a cascade of color. The surrounding formal garden contained low bushes as well as the tall standard type rose tree. At one end of the grounds a beautiful tree of the wisteria family, but with flowers more the size of sweetpeas, shaded the lily-pond where red-gold fish darted among the lovely lily flowers.

When all was dark and still later that night we were entertained by frogs, an almost deafening chorus, each frog trying to outdo the other, till the leader must have become annoyed at being outcroaked, and motioned for quietness. There would then be a dead silence; and after a few seconds the leader would mutter something in a deep croak, then again silence, more silence, and a few more instructions before they all took up the chorus again, making it louder than ever.

The next day (Saturday) we headed north again going thru some lovely country, even tho we had chosen the shorter route rather than the mountainous one thru the Redwoods, which we were saving for the return trip.

The bird-life throughout the whole vacation was amazing in its glorious coloring, shading from a deep sky-blue to sapphire into midnight blue, some birds with black and white wings and bodies and brilliant scarlet heads, others with scarlet breasts, or all midnight blue with just the shoulder of the wing a deep red. In Yreka and also in the mountains around Fort Jones we saw a deep golden yellow bird which appeared to be a wild canary, but this is getting ahead of our trip.

At Redding, the scenery changed somewhat, the new spring green of the lacy-type trees blending in with the darker green of the pines all thru the mountains, with flowering trees and shrubs in the foreground, and bare or snow-tipped mountains way off in the background, the deep blue sky and clear air making the entire scene look most unreal, and more like the back-drop on a stage with its stillness and unusual coloring.

Driving along a tree-lined country road one afternoon, we turned a sudden bend, to see framed at the end of the foliaged grove, Mount Shasta, rising over 14,000 feet in the sky with the brilliant sun shining upon the deep white snow of her slopes and shading then to a faint rose tint. It resembled a huge cake covered by whipped marshmallow with a slight scattering of chocolate flakes for decoration. This was where the sun had melted the snow a wee bit here and there, the surrounding mountains having hardly any snow on them. Shasta tops them all by thousands of feet.

Then swinging slightly to the left of this same road, thru the green trees, we sighted the deep grey of Castle Crags, which to us was more like a hugh cathedral than a castle, with its many spires of rock. Further on to the right we saw

a deepish yellow-pink mountain, which, strangely enough, was called BLACK Butte!!

All the foregoing took us from the Friday till late Sunday and there is a great deal more that we saw, but if I keep on with telling it all, the "Rock Hounds" will think I have forgotten what Mr. Lisle and I really set out to get.

Sunday afternoon we arrived at the little old mining town of Yreka, from which we had planned to take the more or less good road up to Happy Camp, 86 miles of dirt road and the bad trail beyond that to the Chan Jade Mine. Here we heard that the roads even to Happy Camp were in such poor condition that we decided it was no go till more warm weather had dried out the mud and some corporation had fill in the pits and rutholes. The snow had been there even the week before, and the few mild days we had enjoyed were not sufficient to melt it, so where that trip was concerned our feet became very cold and our hearts weak.

That evening we were wandering around the little town, feeling sorry for ourselves at the loss of the trip, when we happened to see some minerals in the window of a real estate office. As we were peeking in at them, an old chap came along who informed us that they had been collected by Major White, the local judge. That settled Mr. Lisle's mind as to our staying another day in Yreka for he was bound to go back the next day to see what the Judge could offer in the way of information.

After a pleasant visit with Judge White, the next morning (Monday), we were referred to a Mr. Brussell, a wonderful and active old chap of 85 who looked at least 15 years younger. He had some very nice polished specimens which he showed us and then sent us to see his son, next door, who was a monument cutter and polisher. Before leaving, these two men gave us the name of a man up the mountain at Fort Jones who could show us where to get some nice rhodonite.

The road southwest to Fort Jones from Yreka is oiled for its 16 miles but somewhat pitted and crosses a mountain composed largely of serpentine. Some of the serpentine is light green and some runs to a dark green—all very attractively marked. (On the way back we stopped the car to obtain some specimens at a road cut but got only a few pieces as we abandoned collecting when we perceived a huge truck loaded with timber coming down the road at a fast lick. As the road was narrow we thought it would be better to get ahead as quickly as possible in case the truck's brakes should let go. I later sent one piece to the owner of the Happy Camp Jade Mine who polished it and sent it back to me in the form of a very attractive gold-mounted brooch. Much of the serpentine is quite hard and takes a good polish. There are hundreds of thousands of tons of it but owing to the truck incident we did not secure the best marked type. After the war, and tires are with us once more, rock hunters will find plenty of cutting material there without trouble.).

Now here is where my trials started! In the tiny village of Fort Jones we asked for this Mr. Bill "Somebody" (we had forgotten his name) and were told to take the third turn to the right—and there was the very man we were looking for, working in his garden. (He was the county road superintendent). He could not go with us but very kindly gave us the name of a man who could and telling us to drive along the road for three miles till we came to the end of ditch running along the road, turn right, go over a cattle guard and cross the bridge, drive on another mile and we would come to Mr. Rude's farm. Mr. Rude would show us where to get the rhodonite. Have you ever tried to follow instructions like these when the road forks, and the two roads have identical landmarks? Incidently, the "bridge" was only a minute one and was over about a cupful of water!

Well! we drove miles and miles (almost to an old gold mine, but we didn't find that out till we has retraced our weary way and were far removed from

it again) and found the way getting narrower and "ruttier" with every mile as evidently the traffic it carried were huge trucks loaded with big trees. We had no ambition to be behind another truck on a very steep hill and find it coming backwards onto us should its brakes be defective!

We then found another farmer to whom Mr. Lisle explained what we were seeking! "Come along with me" the farmer said, and my husband hiked over the fields and out of sight, farmer's dog and all; but I was wise enough to stay behind, comfortably in the car with a book. After half an hour or so he returned in a dejected and very disappointed frame of mind, which he tried to hide from the farmer. The latter had marched him a mile or more just to show him a pile of ordinary common or garden rocks excavated in connection with some irrigation work!

I wanted to give up and go back to Yreka; but Mr. Lisle was determined by now and would not listen to reason. That is, not to MY reason. Back we drove along the road to a school house where an elderly school marm gave us some further directions, including "turn to the right over a bridge and a cattle guard"—no, not the same ones, and that would lead us to the Rude ranch on whose property the rhodonite was located in some new manganese workings.

Having gone back to the fork of the road, at the end of the ditch, no less than three times and gotten to a different farm each time, yelling our requirements over barbed wire fences, thru the noise of crying children and barking dogs, and taken the time of busy farmers and their wives to direct us to some equally busy farmer, we finally did get to Mr. Rude's farm. Mr. Rude very kindly directed Mr. Lisle over a gate, thru a field for a mile or two to a new manganese working, while I again sat comfortably in the car! He found just what he wanted this time, the only trouble being he could not carry very much. However, he did not want to be too greedy, so having loaded his knapsack, he came thru the trees singing with the joy of having something worthwhile to bring back to San Francisco to show for our trip. But the song came to a sudden stop when he met a snake also taking a little evening exercise. However, it was not a rattler!

From Yreka we went to Gold Hill, Oregon, and there found gas had been rationed, and the natives not at all anxious to sell any of their precious stock to strangers. We figured it were better to make tracks for home,, but first we stopped at the Gem Cottage on highway 99 and left some of the rhodonite to be polished, also buying some minerals. The Gem Cottage is run by two charming people, Mr. and Mrs. A. A. Dixon (I believe from New Jersey, or the wilds of Long Island) and they certainly have some beautiful stones on display.

We returned home via Grants Pass, Ore., and the very beautiful Redwood National Park. That glorious drive requires pages of description all to itself, and has nothing to do with minerals.

Vicarious Collecting by Queens Society

A novel idea has recently been inaugurated by the Queens Mineral Society of Long Island, N. Y. It is called "Vicarious Collecting"—exchanging mineral specimens by the club with other clubs. This is worked as follows:

All members desiring to participate in the exchange bring to a meeting good crystallized specimens (or crystals) of their duplicates (massive, common minerals are tabooed). A typewritten account of one page or more describing how the specimen was collected must accompany each specimen submitted. The Club passes on the suitability of each specimen thus submitted; if it does not meet the requirements it is rejected.

These specimens, each with its label and typewritten account, are then exchanged with other clubs, the Society paying the postage on all shipments it sends out.

When a shipment is received, each specimen is numbered (unopened) and the members participating in the exchange draw for them. If a member obtains a specimen he already has in his collection, he is privileged to exchange it with a fellow member.

A number of very satisfactory exchanges have been made with western clubs.

NEW GUINEA RICH IN GOLD

(See map on page 376, November, 1942, ROCKS AND MINERALS which shows part of New Guinea)

New Guinea, in the southwestern Pacific Ocean, is the third largest island in the world. It is exceeded in size by Australia and Greenland. Its extreme length is about 1,500 miles, maximum width about 400 miles, and area about 310,000 sq. miles.

The island is also known as Papua, a word derived from the peculiar frizzled manner of dressing the hair. In the Malay language the word which signifies "frizzled" is *puapua*, which, of course, is easily contracted into *pa-pua*. The name Papua, however, is now confined to British New Guinea.

New Guinea is divided into three territories: Dutch New Guinea, the western portion (151,000 sq. miles and 200,000 population); British New Guinea (Papua), the southeastern portion (88,000 sq. miles and 252,000 pop.); and Australian Mandate, the northeastern portion, which was formerly German New Guinea (70,000 sq. miles and 531,000 pop.).

The island is extremely mountainous, some of the peaks being very high. In British New Guinea, Mt. Victoria, in the great Owen Stanley Range, rises 13,200 ft. above sea level. Other high peaks in this area are Mts. Scratchley and Albert Edward. In the Mandated Territory are the Finisterre, Kratke, Bismarck, and Prince Alexander Mountains. In Dutch New Guinea are the Snowy and Charles Louis Mountains. Mt. Wilhelmina, in the Snowy Mts., is 15,600 ft. above sea level. This range received its name "Snowy" due to the fact that perpetual snow has been found at 14,635 feet.

Among the important rivers of the island are the Mamberamo and Sepik (called "Septik" by white residents), both in the north; the Fly in the south; and the Digul (Digoel) in the southwest.

Much of the island is unknown due to its extreme ruggedness, enormous swamps, unhealthy climate, and savage, superstitious natives—many of whom are cannibals.

Geology

Sandstones, slates, limestones and granites are the prevailing rocks of the island—at least along the coast. Along the eastern coast, gold-bearing quartz is present and many of the small streams are auriferous.

Both along the northern and southern coasts the mountains consist of a white limestone, but in the interior a brownish sandstone and a reddish clay mixed with blocks of quartz are of frequent occurrence; coal is also found.

Park Discovers First Rich Gold Deposit

When William Park, an Australian prospector, who was known throughout New Guinea as "Shark-eye Park" or "Shark-eye Bill", discovered gold in the Koranga Creek above where it joined the Bulolo Creek, in the Mandated Territory, about 1926, it created a gold rush. Gold had been found earlier in the Territory in some of the streams by a number of prospectors but the deposits were not rich enough to warrent working them.

Park, however, found the first rich deposit in a bend of the Koranga Creek at the northeast base of Mt. Kaindi that is 9,000 feet high. From the broad shoulders of Mt. Kaindi, the waters of Koranga, Watut, Namie, and another creek (later to be called Edie) tumble down until they reach the Bulolo River, which through its great tributary, the Watut, flows northeast to reach another great river, the Markham, which flows eastward into the Huon Gulf.

Soon the news leaked out and prospectors flocked into the area, which later became known as the Koranga Creek field. The field is 3,000 feet above sea level.

Royal and Glasson Discover the Edie Field

Bill Royal and Dick Glasson, two penniless prospectors, resolved to find another and richer field higher up on Mt. Kaindi. With a few natives they began climbing the stupendous Edie Gorge, penetrating a most treacherous mountain growth of roots, vines, mosses and trees, that everywhere confronted them, but

after struggling against great odds, including the intense coldness of the atmosphere, they at last reached the 7,000 foot level—torn, bleeding, ragged, exhausted and discouraged. Royal, eager to push on, stumbled ahead with one native and within a few hundred feet emerged out of the jungle into open country. Here the panorama of mountain scenery almost took his breath away! At his feet flowed a small stream, tumbling down the mountain side. This narrow creek later received the name of Upper Edie. Inserting his pan into the icy water he picked up his first panful of gravel. The amount of gold nuggets that met his anxious, eager gaze, almost set him crazy. "Gold! Gold! Gold! he shouted. He dropped everything and raced back to Glasson! (This was in 1926).

There was gold everywhere! No matter where they panned, there would be gold in the dish—ounces of it! The deposit was far richer than the field below. They had discovered the richest field on the island and though the field was most difficult of access, prospectors flocked into it.

The field is 70 miles inland (west) from the coast and 7,000 feet above sea level. It soon became known as the Edie or Edie Creek field.

Because of the excessive ruggedness of the terrain, the fields were reached with great difficulty. Later airplanes were used, not only to transport prospectors back and forth, but even equipment and supplies. Indeed, a huge dredge was brought in piecemeal, by airplanes, and assembled in the mountains to work the rich gold-bearing gravels of the Bulolo River Valley. Flying became so common that some of the miners, it is said, actually had their milk delivered daily by planes.

Small Settlements Spring Up

Salamaua, a little beach settlement on the Gulf of Huon, was the port of entry for the gold fields. Here prospectors landed or had their equipment unloaded —at times the beach was simply covered with boxes and cases. Salamaua is northeast of Mt. Kaindi and the goldfields.

Another small settlement is Lae, also on the Gulf of Huon, but about 35 miles north of Salamaua. It began as a station for flying supplies in to the gold fields. It is now the capital of the Mandated Territory.

Wau, a little mining settlement in the Bulolo Valley, is the gold fields airport (elevation 3,400 feet above sea level).

Fortunately, the gold fields of Bulolo Valley and Edie Creek are far above the unhealthy swamp lowlands so that climatic conditions are good for white men.

The higher altitude of Mt. Kaindi was perhaps never visited by man before Royal and Glasson scaled it, as the superstitious natives had always shunned it.

In the Edie Creek district, where some mines are now underground workings, the orebody consists of quartz, calcite, rhodochrosite, limonite, and wad.[1] Two important mines are the Day Dawn and Golden Ridge.

Gold is also present in the Prince Alexander Mountains.

British New Guinea

Gold also occurs in this portion of the island, the deposits being chiefly placer. More than one-half of the production comes from two islands off the southeast coast — Louisiade and Woodlark (Murua). Woodlark Island is 35 miles long, 10 miles wide and is of volcanic origin; its highest point is 350 feet above sea level. Most of the gold is from quartz lodes—the gold being associated with quartz, calcite, pyrite, and galena, in impregnated bands some 14 feet wide.[2]

Other gold fields in British New Guinea are Sudest, and Misima Islands, Gira, Yodda, Milne Bay, Cloudy Bay, and Musa River.[3]

Port Moresby is the picturesque capital of British New Guinea on the southwest coast. It is the chief port and built on a small hill peninsula that juts out into the Gulf of Papua. Its population is about 1,000. An active copper mine is in its vicinity.

On d'Entrecasteaux Islands, off the

1 Emmons, William H., *Gold Deposits of the World*. McGraw-Hill Book Co., New York and London, 1937, p. 456.
2 Emmons, Williams H. Op. cit. p. 457.
3 Stokes, Ralph, *Mines and Minerals of the British Empire*. Edward Arnold, London, 1908, p. 372.

southeastern tip of British New Guinea, are deposits of banded quartzite which are used locally for various purposes.

Beside gold, osmiridium has also been found in Gira Creek.

Dutch New Guinea

There are two widely separated gold fields but little is known about them.

Other Mineral Occurrences

The following minerals have been reported from New Guinea:[4] Coal (lignite) on the mainland and in the southern part of New Ireland Island; copper, in the form of chalcopyrite and malachite; iron, hematite and magnetite, apparently in large quantities; lead, in the form of red oxide; mica, in fairly large sheets; platinum; petroleum; phosphate rock, on the Purdy Islands; sulphur, in several localities; and tin.

Native copper in lava is said to have been found in New Guinea—it may occur in the copper mine near Port Moresby.

4 Mineral Resources of the United States 1925, Bureau of Mines, Washington, D. C., p. 491.

Gold nuggets when cut and polished, almost always show a granular structure similar to that of vein gold. Lindgren[5] reports that Liversidge, in a long series of experiments, found only two specimens (both from New Guinea) which showed a concentric structure indicative of concretionary deposition.

English[6] reports astride, an ornamental stone consisting mainly of chromojadeite, from Manokwari, New Guinea.

Additional Reference

A most fascinating, historical account of the gold discoveries in New Guinea by Park, Royal, Glasson, and other prospectors, is *Gold-Dust and Ashes* by Ion L. Idriess, the popular Australian writer. The book contains 283 pages with 36 illustrations and is published by Angus and Robertson, Ltd., 89 Castlereagh St., Sydney, Australia. We have used the book freely in preparing these notes.

5 Lindgren, Waldemar, *Mineral Deposits*. McGraw-Hill Book Co., New York and London, 1928, p. 266.

6 English, George L., *Descriptive List of the New Minerals, 1892-1938*, McGraw-Hill Book Co., New York and London, 1939, p. 18.

Collectors' Tales - - Some Blasting!

Some years ago when the Bear Mountain Bridge road north of Peekskill, N. Y., was under construction, there was one small section which took months to excavate which ordinarily should have taken but a few days. This section cut across a very steep, almost precipitous, slope at the bottom of which was the main line of the NYCRR, along the east shore of the Hudson River. The rock had to be chiseled out almost by hand, so careful had the men to be in not allowing any of it to roll down the mountainside. At one ticklish spot, the most dangerous of all, the railroad permitted a full blast to be set off (to shoot the works). I was one of a group of engineers who took shelter in the railroad tunnel—below the dangerous area—to watch the show. When the blast went off, we thought the whole mountain was coming down and when the rocks ceased rolling the tracks were buried to a depth of at least three feet. Traffic, of course, had been stopped—had been shunted over another route—and was not resumed until many hours later.

About the same time, but on the other side of the river, another road was under construction and it, too, overlooked a railroad which also followed the edge of the Hudson River. It, too, had its dangerous spots where blasting had to be done with extreme care. It is said that the foreman on the most dangerous section came to work one morning, dead drunk. Being disgusted with the slow progress his crew had been making, he ordered, on his own initiative, that a big blast be set off. His men, thinking that the railroad had given permission for this, followed instructions. The holes were so heavily loaded with dynamite that when the blast went off it blew the rocks completely over the railroad and into the river—not a single piece fell on the tracks.

P. ZODAC.

Clubs Affiliated With the Rocks and Minerals Association

ARIZONA

Mineralogical Society of Arizona
Geo. G. McKhann, Sec.. 909 E. Willetta Street, Phoenix.
Meets at the Arizona Museum in Phoenix on the 1st and 3rd Thursday of each month.

CALIFORNIA

East Bay Mineral Society
Miss Nathalie Forsythe, Sec., 1719 Allston Way, Berkeley.
Meets on the 1st and 3rd Thursdays of each month (except July and August), at 8:00 p.m., in the Lincoln School Auditorium, 11th and Jackson Sts., Oakland.

Northern California Mineral Society, Inc.
L. M. Demrick, Sec., 424 Ellis St., San Francisco.
Meets on the 3rd Wednesday of the month at the Public Library in San Francisco.

Pacific Mineral Society
Mrs. Maude Oke, Sec., 9115 S. Harvard Blvd., Los Angeles.
Meets on the 2nd Friday of each month at 6:30 p.m., at the Hershey Arms Hotel, 2600 Wilshire Blvd., Los Angeles.

Southwest Mineralogists
Dorothy C. Craig, Corres. Sec., 4139 S. Van Ness Ave., Los Angeles.
Meets every Friday at 8:00 p.m., Harvard Playground, 6120 Denker Ave., Los Angeles.

COLORADO

Canon City Geology Club
F. C. Kessler, Sec., 1020 Macon Ave., Canon City.
Meets on the 1st and 2nd Saturdays of each month at 9:00 a.m. in the High School Building, Canon City.

CONNECTICUT

Bridgeport Mineral Club
Miss Georgianna Seward, Sec., 2859 Main St., Bridgeport.
Meets in the Bridgeport Public Library on the 3rd Monday of the month.

Mineralogical Club of Hartford
Frank P. Rockwell, Secretary, 88 Fern St., Hartford
Meets the 2nd Wednesday of each month, at 8:00 p.m., at 249 High St., Hartford.

New Haven Mineral Club
Mrs. Lillian M. Otersen, Sec., 16 Grove Place, West Haven.
Meets on the 2nd Monday of the month at the Y. W. C. A. on Howe St., New Haven.

IDAHO—OREGON

Snake River Gem Club
Mrs. A. Ingraham, Sec., Box 714, Ontario, Ore.
Meets alternately in Payette, Idaho, and Ontario, Oregon, (two small cities on the Snake River) on the 3rd Tuesday of every month.

ILLINOIS

Junior Mineral League
William Dacus, Sec., Morgan Park Junior College, 2153 W. 111th St., Chicago.

MAINE

Maine Mineralogical and Geological Society
Miss Jessie L. Beach, Sec., 6 Allen Avenue, Portland.
Meets last Friday of the month at 8 p.m., at the Northeastern Business College, 97 Danforth Street, Portland.

MASSACHUSETTS

Boston Mineral Club
Mrs. Grace G. Dearborn, Sec., 40 Mt. Vernon St., Cambridge.
Meets on the 1st Tuesday of the month at 8:00 p.m., at the New England Museum of Natural History, 234 Berkeley St., Boston.

Connecticut Valley Mineral Club
Mary E. Flahive, Secretary, 96 South St., Florence
Meets on the 1st Tuesday of each month at 8 p. m. at various institutions in the Connecticut Valley.

MISSOURI

National Geologist Club
Mrs. D. P. Stockwell, Pres., Mt. Olympus. Kimmswick.

NEVADA

Reno Rocks and Minerals Study Club
Mrs. Rader L. Thompson, Sec., Box 349, R2. Reno.
Meets on the 1st Wednesday of each month, at 7:30 p.m., at the Mackay School of Mines, Reno.

NEW JERSEY

Newark Mineralogical Society
Louis Reamer, Secretary, 336 Elizabeth St., Orange.
Meets on the 1st Sunday of the month at 3 p.m. at Junior Hall, corner Orange and North 6th Streets. Newark.

New Jersey Mineralogical Society
G. R. Stilwell, Sec., 1023 W. 5th St., Plainfield.
Meets on the 1st Tuesday of the month at 8 p.m. at the Plainfield Public Library.

NEW MEXICO

New Mexico Mineral Society
R. M. Burnet, Sec.-Treas., Carlsbad.

Society of Archaeology, History and Art Carlsbad.

NEW YORK

Chislers, The
Miss Evelyn Waite, Sponsor, 242 Scarsdale Road, Crestwood, Tuckahoe.

Queens Mineral Society
Mrs. Edward J. Marcin, Sec., 46-30—190th Street, Flushing.
Meets on the 1st Thursday of the month at 8 p.m. at 8501 - 118th St., Richmond Hill.

PENNSYLVANIA

Thomas Rock and Mineral Club
Mrs. W. Hersey Thomas, Pres., 145 East Gorgas Lane, Mt. Airy, Philadelphia.
Meets on the 3rd Friday of each month, at 8:00 p.m., at the home of its president, Mrs. Thomas.

VERMONT

Mineralogical Society of Springfield
Victor T. Johnson, Sec., 11 Elm Terrace, Springfield.
Meets on the 3rd Wednesday of each month at 8:00 p.m. at the homes of members.

WISCONSIN

Wisconsin Geological Society
Milwaukee Public Museum, Milwaukee, Wisc.
Meets on the 1st Monday of each month at 8:00 p.m., at the Public Museum in Milwaukee.

COLLECTOR'S KINKS

Easing a Tight Cabinet

Do the drawers of your mineral cabinet stick so that they are hard to pull out? An easy way to remedy this is to grease the sides and the top and bottom of the "runners" with paraffine.

Take a cake of paraffine and rub it well over all contact areas of the drawer and then work the drawer in and out of the cabinet a few times. You will be amazed to find how easily they will now work.

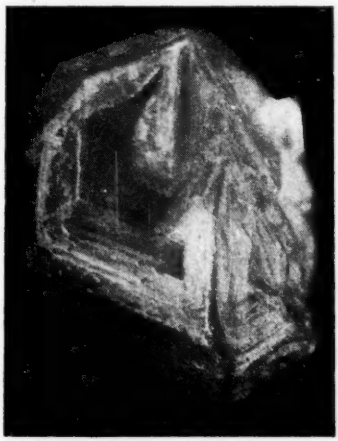
A cake of soap can be substituted if paraffine is unobtainable.

G STANDS FOR GRENZIG!

There is in the possession of John A. Grenzig, the popular mineral dealer of Brooklyn, N. Y., an unusual rock crystal from Porretta, Italy. The crystal has sunken faces, a type known as cavernous quartz, caused by clay interference. On one prism face the letter *G* stands out as distinctly as if an engraver had cut it out. The crystal is 2½ inches high and 1½ inches in diameter through the prisms; the letter *G* is 1¼ inches high and ¾ inch wide.

Porretta, Italy, is famous for its cavernous quartz crystals but this is the first time that one containing a letter of the alphabet has been brought to our attention.

Mr. Grenzig has had the crystal (a loose one) for many years and it is one of his prized specimens. He believes that the Good Lord had created it especially for him—does not the letter *G* stand for Grenzig?—in recognition of his many years of faithful service and love for minerals! One thing that puzzles him, however, is why the Creator located the crystal in southern Europe—so far away from Brooklyn? Can anyone solve this riddle?



The Porretta Rock Crystal with its engraved G

SOUTHERN CALIFORNIA LOCALITIES

By JACK SCHWARTZ

656 South Hendricks Ave., Los Angeles, Calif.

3. Rincon, San Diego County.

Rincon, in San Diego County, is but a few miles from Pala, a well known gem locality. Rincon itself has produced much in the way of gems and a trip there is always something to look forward to. Many of the fine pieces in the author's collection are those he himself found in the old mine dumps of Rincon.

Kunzite, which is a lilac-colored variety of Spodumene, is still found at Rincon by lucky rockhounds. The writer has in his possession one specimen he found that is two inches long, one inch wide and one-half inch thick. However, even smaller pieces are rare. Gemstones cut from this stone are outstanding in beauty, but only an experienced gem cutter could turn one out as this material will cleave with the slightest pressure.

Tourmaline, the mineral which needs no introduction to the mineralogist, is found here in large numbers. The commonest is the black Tourmaline, which the collectors snub, for their eyes are for the pink, green or colorless Tourmaline. Much of the Tourmaline taken by the writer are associated with crystals of Epidote and both these minerals are either adhered to or running through Rock Crystal or Smoky Quartz crystals.

Quartz crystals, none very large, some clear and some with inclusions, are common. Many of the crystals are doubly terminated, or in groups while some are singular. The inclusions run from Lepidolite to crystals of Albite. The Smoky Quartz crystals were taken with the same characteristics.

Groups of Quartz crystals, Albite crystals and Lepidolite make attractive specimens. The Albite is collected in well defined crystals. Cookeite occurs rather commonly on the Albite in some spots.

Asteriated quartz, fluorescent Apatite crystals, pink Quartz, Muscovite, Biotite, Microcline, and Essonite Garnet were also taken by the writer.

According to Pabst (1938) Bismuth, Hyalite, Bismite, Spinel, Cassiterite, Topaz, Amblygonite, Orthoclase, Heulandite, Stilbite, and Beryl are also found in and around Rincon.

Literature:
Pabst, A.
1938. Minerals of California. Calif. Div. Mines Bul. 113.
Schwartz, J.
1942. The Gems of Rincon, Californi. Mineralogist Mag. 10 (5) : 139-140.

Tunisia Rich in Minerals

(Continued from page 11)

leadhillite (sulphato-carbonate of lead) have been found at the Jebel Ressas mine; granular metallic lead-gray masses of berthonite (sulfantimonite of lead and copper) occurs at Slata; colorless anglesite crystals and steel-gray spongy masses of cesarolite (hydrous manganate of lead) occurs at Sidi-Amor-Ben-Salem. Phosgenite (chlorocarbonate of lead) has also been found.

Fluorite

In 1937 a deposit of fluorite was opened up at the southern base of the Jebel Zaghouan, about 40 miles south of Tunis.

Marble

Most of the celebrated Giallo Antico Marble used by ancient Rome was obtained from Simittu Colonia (now known as Chemtou) in the valley of Medjerda. These are still being worked.

Manganese

Rich deposits of manganese ores are also said to occur in Tunisia.

CLUB AND SOCIETY NOTES

New York Mineralogical Club

American Museum of Natural History, New York, N. Y., Wednesday, Nov. 18, 1942.

Convened: 8:20 P.M. Attendance: 50.

Dr. Pough reported for the excursion committee on the Nov. 8th field trip to the Delaware Aqueduct dump in Yonkers; 25 members attended and the outstanding find of the day was several microscopic crystals having the appearance of cenosite.

Mr. Trainer announced the appointment of the following curators committee:

Mr. E. L. Sampter, Chairman
Mr. J. Vlismas
Mr. E. Von Schroetter

Miss Elizabeth Armstrong, of the Department of Geology, Columbia University, then addressed the meeting on "Crystal Quartz in the Eastern United States." The speaker reviewed the crystallography of quartz with special attention to the distinction between right and left handed crystals and the various types of twins. She then described the manner of occurrence of quartz crystals at Ellenville, N. Y.; Herkimer and Montgomery Counties in New York; Allegheny, Alexander, and Iredell counties in North Carolina; and the Hot Springs district in Arkansas. The descriptions were illustrated with colored pictures taken during the course of her study of these localities during the past summer. This investigation was supported by a grant from the National Research Council of the Rockefeller Foundation.

Mr. John C. Pohl showed colored slides of his mineral collection including pictures of Franklin minerals in white and in ultra violet light.

The meeting was adjourned at 10:00 P.M.

M. ALLEN NORTHUP,
Secretary.

Connecticut Valley Mineral Club

When the Club was organized in 1941, the members approved a plan that meetings be held at various institutions in the Connecticut Valley of central New England. Now that tires and gasoline are being rationed, it is not feasible to do much traveling so all meetings are being held at the Club's headquarters at the Museum of Natural History, Springfield, Mass.

The program for the 1942-1943 meetings includes a study of the chemistry of minerals —at the December meeting the members learned how to use a blowpipe. A film, "Aluminum from Mine to Metal" was also shown at this meeting.

Mary E. Flahive, Sec.

Questions and Answers

Ques. "Why does not ROCKS AND MINERALS have a lapidary department?" B. M. B., Warren, Ohio.

Ans. ROCKS AND MINERALS was perhaps the first magazine to print in the English language articles on the cutting and polishing of minerals. From Sept. 1931 to Nov. 1938 it featured in each issue—The Amateur Lapidary. This department was discontinued because, after covering all phases of the subject, our contributors ran out of ideas. There are now thousands of amateur cutters all over the nation but it was ROCKS AND MINERALS which got them started.

Ques. "Will you please arrange to send ROCKS AND MINERALS earlier to me each month? I received the December issue on the 12th. Every month it is later. Why?" A. R. G., Bayside, L. I., N. Y.

Ans. Every issue for the past six months left the Peekskill Post Office on or before the 4th of each month. We can't understand why it should take the magazine 8 days to go 50 miles. File a complaint with your local Post Office as the delay must be due at your end.

Vermont Copper Mines May Reopen

According to the Dec. 12th issue of *Boston Post*, the long abandoned Ely copper mine at Vershire (Copperfield), Vt., is to be reopened in the spring of 1943. The Ely Mine was once the largest copper mine in the country. Vermont collectors will watch this mine carefully for its reopening may mean many nice mineral specimens. (We are indebted to Mr. H. L. Van Wyck of Standish, Me., for the clipping).

With Our Members

George E. Rendell, patent attorney of Utica, N. Y., who has a large and very fine mineral collection, displayed recently some of his most colorful specimens in the Savings Bank of Utica. The exhibit created considerable interest and was viewed by thousands. A most interesting write-up, including a large photo of Mr. Rendell and part of the exhibit, appeared in the Nov. 15th issue of the *Utica Observer Dispatch.*

Rud Pohli, of Hackettstown, N. J., collected recently some interesting pegmatite specimens containing brown titanite crystals. These came from a new locality near Hackettstown.

James G. Manchester, of Hampton Bays, N. Y., is sojourning in St. Petersburg, Fla., for the winter; Marshall A. Alworth, of Duluth, Minn., is basking in the warm sunshine of Miami, Fla.; while Peter Zodac, Editor of ROCKS AND MINERALS, is freezing as usual in the cold, damp, blustery, snow-covered, ice-infested, Peekskill, N. Y.

Roy Latham, of Orient, N. Y., has one of the most interesting private museums in the East. All varieties of natural history specimens are represented such as birds, insects, moths, butterflies, shells, fossils, minerals, etc., etc. His Indian relic collection is very extensive. Any collector who should find himself at the eastern tip of northern Long Island, should look up Mr. Latham to view his collection. A treat is in store for you.

Another private museum which is most amazing for the attractiveness of its displays and the wide varieties of items, (minerals, however, are in the lead), belongs to Mrs. R. M. Gunnison, on Quaker Hill, Pawling, N. Y. The museum is housed in a special building and is opened to the public but closed during the winter.

Ken Pugsley, who has been residing in the Bermuda Islands for over a year, returned to his home in Pawling, N. Y., recently, bringing with him some attractive calcite stalactites from the caves on one of the islands.

John Pohl, the genial collector of Easton, Penn., who has one of the finest mineral collections in the East, has had many of his best specimens photographed (some in color) and mounted in an album. Now when Mr. Pohl goes visiting—in New York, Boston, or Tampa, Fla.—he takes the album with him to show collectors what he has in his collection. It is needless to say that his pictures leave collectors speechless!

Miss Ethel Eleanor Wales, formerly of Peekskill, N. Y., later of Dorchester, Mass., is now a Lieutenant in the WAAC and stationed in Iowa.

With Our Dealers

A new dealer, Jno. B. Litsey, of Dallas, Texas, makes his bow in this issue of ROCKS AND MINERALS. He is offering some interesting doubly terminated crystals with movable bubbles. Have you one in your collection? Incidentally, Mr. Litsey has contracted for space in 12 issues—1943 complete—so watch for his future offerings.

J. Gisler & Son, of San Francisco, Calif., offer our readers this month three attractive western minerals—garnet, tourmaline, and vesuvianite. Don't forget—we said attractive minerals.

Ward's Natural Science Est., Inc., of Rochester, N. Y., are offering this month a mineral from near the Arctic Circle. The locality will appeal to many collectors so you better rush your order in before the mineral is all gone. First, however, look their ad up to see what else is being featured.

Schortmann's Mineral Exhibit in New York City last month went over with a bang. Though many collectors were conspicuous by their absence (being in the armed service of our country—some on foreign soil), a large number of new faces were to be seen. War or no war, mineral collecting will always be popular.

A large array of *Mineralights,* manufactured by Ultra-Violet Products, Inc. of Los Angeles, Calif., were on display at Schortmann's exhibit in New York City. The different sizes, from little fellows up to big ones, and their excellent performance on many fluorescent minerals, astounded collectors. Quite a number of the lamps were purchased during the early hours of the first day.